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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,168	02/28/2002	Rachid B. Slimane	GTI-1480	2657
7590	12/01/2003		EXAMINER	
Mark E. Fejer Gas Technology Institute 1700 South Mount Prospect Road Des Plaines, IL 60018			JOHNSON, EDWARD M	
			ART UNIT	PAPER NUMBER
			1754	

DATE MAILED: 12/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/086,168	SLIMANE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Edward M. Johnson	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 March 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-7 is/are allowed.
- 6) ☒ Claim(s) 8-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                      | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                             | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3/29/02</u> | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 8-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 is unclear as to whether the range of about 10% to about 60% applies to the substrate material, the metal oxide disposed thereon, or both. For purposes of examination, the range has been applied to the metal oxide. Examiner suggests clarification in the claim.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 8-14 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 97/32813.

Regarding claim 8, WO '813 discloses a catalyst for the oxidation of sulfur compounds (title) comprising 5% iron oxide and 10% zinc oxide (see page 14, lines 17-18).

Regarding claims 9-11, WO '813 discloses 10% zinc oxide on silica (see page 14, lines 17-18).

Regarding claim 12-14, WO '813 discloses specific surface area of more than 20 m<sup>2</sup>/g and average pore radius of at least 25 angstroms (see page 6, lines 18-22).

5. Claims 8-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hensley, Jr. US 3,849,296.

Regarding claim 8, Hensley '296 discloses a desulfurization catalyst comprising a support and up to 50% zinc oxide (see abstract).

Regarding claims 9-11, Hensley '296 discloses zinc oxide on silica (see abstract).

Regarding claims 12-14, Hensley '296 discloses a surface area of 232 square meters per gram and an average pore diameter of 79 angstroms.

6. Claims 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by La Hue et al. US 3,935,295.

Regarding claim 8, La Hue '295 discloses zinc oxide sulfur adsorbent (see abstract, lines 9-10), comprising 53 or 26 percent zinc oxide on clay (see Examples 5 and 6).

Regarding claims 9-10, La Hue '295 discloses 53 or 26 percent zinc oxide on clay (see Examples 5 and 6).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 15 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over WO '813.

WO '813 discloses a catalyst for the oxidation of sulfur compounds (title) comprising 5% iron oxide and 10% zinc oxide (see page 14, lines 17-18).

9. Claim 15 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hensley '296.

Hensley '296 discloses a desulfurization catalyst comprising a support and up to 50% zinc oxide (see abstract).

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10. Claim 15 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over La Hue '295.

Regarding claim 15, La Hue '295 discloses zinc oxide sulfur adsorbent (see abstract, lines 9-10), comprising 53 or 26 percent zinc oxide on clay (see Examples 5 and 6).

11. In the event any differences can be shown for the product of the product-by-process claim 15, as opposed to the product taught by WO '813, Hensley '296, and/or La Hue '295, such differences would have been obvious to one of ordinary skill in the art at the time the invention was made as a routine modification of the product in the absence of a showing of unexpected results; see also *In re Thorpe*, 227 USPQ 964 (Fed.Cir. 1985).

***Allowable Subject Matter***

12. Claims 1-7 are allowed.

13. The following is a statement of reasons for the indication of allowable subject matter: It would not have been obvious to one of ordinary skill in the art at the time the invention was made to mix the support material precursor and isopropanol, form a peptized sol from the sol and metal salt solution, and disperse the metal oxide precursor substantially throughout the peptized sol in the method of the instant claim 1.

*Conclusion*

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bertolacini et al. US 4,542,116 discloses a adsorbent comprising a metal oxide (abstract) on a support (see column 12, lines 35-44); Morales et al. US 4,525,472 discloses a demetallization catalyst comprising metal oxides on an alumina support (see abstract, Examples).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward M. Johnson whose telephone number is 703-305-0216. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on 703-308-3837. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

EMJ

A handwritten signature in black ink, appearing to read 'Ed M. Johnson', with a long horizontal flourish extending to the right.